

NCL-19-7680



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

①

D119-796-141TRN
Job Sheet 185707



Part No: D119-796-141TRN

Job Qty: 1 ea

Part Name: Crosstube Turning Detail



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 10/31/18

Job Tracking No:

Due Date: 11/9/18

Created By: Jesse White

Type: Stock

Description:

Note: D119-796-141 REV H IPP REV A RQ 14/06/06 VERIFIED BY DD IPP REV:B 16.05.04 AS PER DWG REV.H
DD VERF:JLM

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup Hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	1 Ea	11/9/18	11/9/18	0.00	0.00	Start Up Crosstubes-1		
100	Mori Seiki	1 pcs	11/9/18	11/9/18	1.99	1.52	Mori Seiki TL-40		
110	QC	1 pcs	11/9/18	11/9/18	0.00	0.00	QC2		
120	Mori Seiki	1 pcs	11/9/18	11/9/18	0.00	1.52	Mori Seiki TL-40		
130	QC	1 pcs	11/9/18	11/9/18	0.00	0.00	QC2		
140	QC	1 pcs	11/9/18	11/9/18	0.00	0.00	QC8		
145	Crosstubes	1 pcs	11/9/18	11/9/18	0.00	0.33	Crosstubes-1		
150	HandFXtube	1 pcs	11/9/18	11/9/18	0.00	0.40	Crosstubes-3		
160	QC	1 pcs	11/9/18	11/9/18	0.00	0.00	QC7-1		
170	Packaging	1 pcs	11/9/18	11/9/18	0.00	0.00	Packaging3-1		
180	QC21-FG	1 Ea	11/9/18	11/9/18	0.00	0.00	QC21		

Part Op 100 - 1-Fill tube with sand & install plugs on both ends as per Folio FB316 2-Turn first side as per Folio FB316 3-Blend
Descriptions: transition lines only, **do not sand whole tube**: FOLIO REV: H DWG REV: H *Use mill bastard
file, brush file repeatedly with file card. *Do not use sandpaper coarser than 320 grit.
120 - 1-Turn second side as per Folio FB316 2-Blend transition lines only, **do not sand whole tube**: 3-Remove sand
and plugs 4- scribe batch # and part # as per dwg
145 - GRIND ONLY TRANSITION LINES SMOOTH LONGITUDE WAY.
150 - 1- handfinish X-TUBE INSIDE AND OUT 2- ALODINE AND ACID ETCH X-TUBE INSIDE AND OUT. USE RED
SCOTCH BRITE
170 - LOCATION : LG014

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D6024-103	Crosstube Material	1 Ea (1 ea)	90-Start up Operation	B150 732

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
90-Start up Operation	D6024-103	1	19	0

Plex 10/31/18 1:18 PM dart.white.jesse

Part Specifications

Specifications could not be found.

Plex 10/31/18 1:18 PM dart.white.jesse



DART Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K84 1K7
CANADA
TEL.: 1 819 832-5200
Email: sales@dartaero.com
www.dartaerospace.com

Container No: S126652



Part: D119-796-141TRN

Job No: 185707

Serial No/Batch: S126652

Revision: H

Inspector:

Exp Date:

Instructions:

Date: 11/12/18

①

DART AEROSPACE LTD	Work Order: 185707
Description: Crosstube Assembly (AW119 MKII Fwd)	Part Number: D119-796-141TRN
Inspection Dwg: D119-796-141 Rev: H	Page 1 of 2

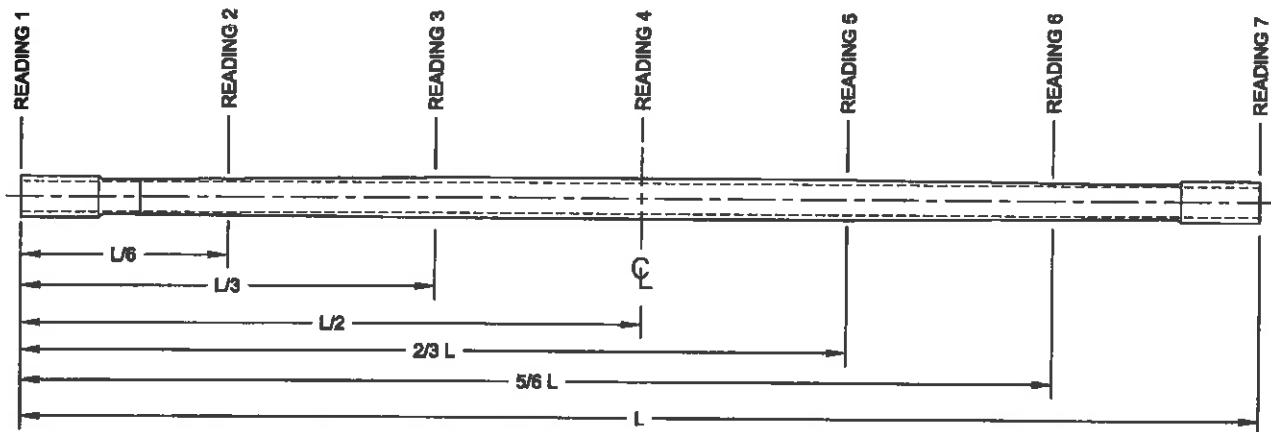
FIRST ARTICLE INSPECTION CHECKLIST

	Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	6.00	+/-0.030	6.003	✓		CNC-08	
	2.516	+/-0.005	2.518	✓		CNC-04	
	2.333	+0.005/-0.000	2.337	✓		↓	
	2.333	+0.005/-0.000	2.337	✓			
	2.408	+0.005/-0.000	2.412	✓			
	2.502	+0.005/-0.000	2.507	✓			
	2.596	+0.005/-0.000	2.601	✓			
	2.596	+0.005/-0.000	2.601	✓			
SIDE B	6.00	+/-0.030	6.004	✓		CNC-08	
	2.516	+/-0.005	2.519	✓		CNC-04	
	2.333	+0.005/-0.000	2.338	✓		↓	
	2.333	+0.005/-0.000	2.338	✓			
	2.408	+0.005/-0.000	2.413	✓			
	2.502	+0.005/-0.000	2.507	✓			
	2.596	+0.005/-0.000	2.601	✓			
	2.596	+0.005/-0.000	2.601	✓			
	102.26	+/-0.020	102.275	✓		tape	

①

DART AEROSPACE LTD	Work Order: 185707
Description: Crosstube Assembly (AW119 MKII Fwd)	Part Number: D119-796-141TRN
Inspection Dwg: D119-796-141 Rev: H	Page 2 of 2

WALL THICKNESS MEASUREMENT



Location	WALL THICKNESS MEASUREMENT (IN)				Deviation Δw (max-min)	TOLERANCE
	w1	w2	w3	w4		
READING 1 L= 0"	.261	.258	.258	.264	.006	0.030"
READING 2 L= 17.043	.181	.177	.168	.182	.014	
READING 3 L= 34.087	.281	.272	.263	.275	.018	0.063"
READING 4 L= 51.13	.298	.292	.296	.307	.015	
READING 5 L= 68.173	.267	.262	.264	.280	.018	
READING 6 L= 85.217	.177	.172	.170	.195	.025	0.030"
READING 7 L= 102.26	.254	.256	.253	.270	.017	

Calibration Result

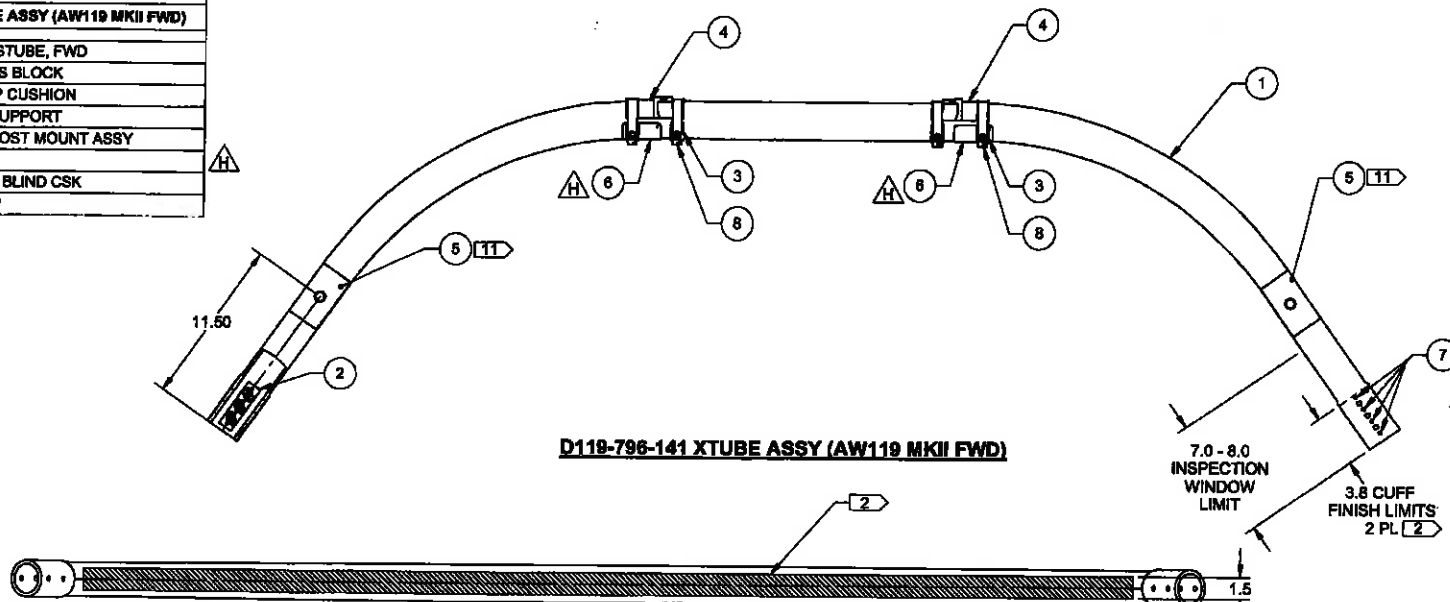
Actual Block Thickness: 100-300

Sitiescan 250 Measured Thickness: 100-300

Measured by: MD	Audited by: GP	Preliminary Approval:
Date: 2018-11-09	Date: 2018-11-15	Date:

Rev	Date	Change	Revised by	Approved
A	15.04.14	New Issue (P/O D119-796-101)	KJ	
B	15.05.14	Tolerances revised per Dwg Rev G	KJ	
C	16.05.27	Dwg Rev updated	KJ	
D	16.09.13	Tolerance revised for Reading 3, 6 & 7	KJ	

ITEM	QTY	P/N	DESCRIPTION
	X	D119-798-141	XTUBE ASSY (AW119 MKII FWD)
1	1	D119-798-141BND	CROSSTUBE, FWD
2	4	D2873-043	RADIUS BLOCK
3	4	D5123-3	CLAMP CUSHION
4	2	D5124-1	FWD SUPPORT
5	2	D5152-041	FWD POST MOUNT ASSY
6	2	D5305-1	SHIM
7	16	CR3212-4-08	RIVET, BLIND CSK
8	4	MS21920-24	CLAMP



NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: APPLY MATTE CLEAR COAT PER QSI 005 4.2
MASK D5124-1 FWD SUPPORTS, D5305-1 SHIMS AS WELL AS UNDERSIDE OF CROSSTUBE AS SHOWN (B3-1, HATCHED AREA),
PAINT OUTSIDE PER DART QSI 005 4.2 AFTER APPLYING CLEAR COAT
DO NOT APPLY FINISH (PAINT OR CLEAR COAT) TO CUFFS IN LOCATION SHOWN, MASK PRIOR TO FINISHING
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: IDENTIFY USING PART NUMBER "D119-798-141" AND BATCH NUMBER ON INSIDE OF CUFF PER QSI 044 6.4
- 7) WEIGHT: 18.54 lbs
- 8) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE.
THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM DEFECTS SUCH AS SCRATCHES, NICKS OR DENTS.
DEFECTS UP TO 0.005 MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 9) PRIOR TO FINISHING, ABRASE MATING SURFACES OF D5124-1 FWD SUPPORTS AND CROSSTUBE WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASH'N'WIPE DEGREASER. APPLY A 0.1 MIN THK LAYER OF PROSEAL 890 ON THE INSIDE CONCAVE SURFACE OF THE D5124-1 FWD SUPPORTS AND INSTALL AT AN 8.4" OFFSET FROM THE CROSSTUBE BENDING PLANE. INSTALL THE MS21920-24 CLAMPS AND D5123-3 CLAMP CUSHIONS WHILE WET.
- 10) TORQUE MS21920 CLAMPS 80 - 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY. THE NUT IS FACING AFT AND HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.
- 11) PRIOR TO FINISHING, ABRASE MATING SURFACES OF CROSSTUBE AND D5152-041 WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASH'N'WIPE DEGREASER. INSTALL D5152-041 WITH LAYER OF PROSEAL 890 ON INSIDE CONCAVE SURFACE, 0.1 MIN THK. LOCATE D5152-041 USING TOOL DT10089.
- 12) PRIOR TO FINISHING, ABRASE MATING SURFACES OF CROSSTUBE AND D5305-1 SHIM WITH SCOTCH BRITE 7447 RED AND REMOVE RESIDUE WITH DUPONT 4105S WASH'N'WIPE DEGREASER. INSTALL D5305-1 SHIM WITH LAYER OF PROSEAL 890 ON INSIDE CONCAVE SURFACE, 0.1 MIN THK. USE ADDITIONAL TEMPORARY MS21920-24 CLAMP TO APPLY CLAMPING PRESSURE FOR 72 HOURS.

RELEASED
2015-11-04
BEN 15-642

H	ADD D5305-1 SHIM, D5024-103 WAS D5005-103, D5124-1 NOW INSTALLED ON PRIMER	AP	15.10.13
G	FINISHING ORDER ADJUSTED, CR3212-4-08 WAS -07, CUFF DIA TOLERANCE INCREASED TO +/- 0.005	AP	15.04.24
F	REMOVED PRIME/ PAINT ON CUFFS. 2.516 WAS 2.500 (CB-5)	AP	15.02.03
E	D5152-041 FWD STEP POST ASSY WAS D5150-1 STEP POST. SCOTCH BRITE 7447 RED WAS 180 GRIT SANDPAPER, ANGLE (87-2) DIMENSIONED FROM NEW DATUM	DB	15.01.15
D	ADD D5150-1 STEP POST (20). MOVED INSPECTION WINDOW DETAIL TO SHEET 1, MODIFIED NOTES ON SHT 1 & 3	DB	14.11.25
C	CR3212-4-07 RIVETS WERE CR3212-4-08, 7.5 DEG CUFF ANGLE OFFSET REMOVED (SHT 3). CUFF DIAMETER ON D119-798-141 TRN REDUCED TO 2.800, ADDED INSPECTION WINDOW (SHT-3), ADDED SHT 4	AP	14.10.23
B	ADDED D2873-043 RADIUS BLOCK, CR3212-4-08 RIVETS, ADDED SKIDTUBE REFERENCE FOR LOCATING CUFF HOLES, RE-ORGANIZED NOTES AND REMOVED REDUNDANT INFORMATION	AP	14.09.02
A	NEW ISSUE	AP	14.08.09
REV.	DESCRIPTION	BY	DATE
DESIGN	AP		
DRAWN	AP		
CHECKED	AJS		
MFG. APPR.	JLM		
APPROVED	WM		
DE APPR.	DS		
DATE	15.10.13		

APPROVED

DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA

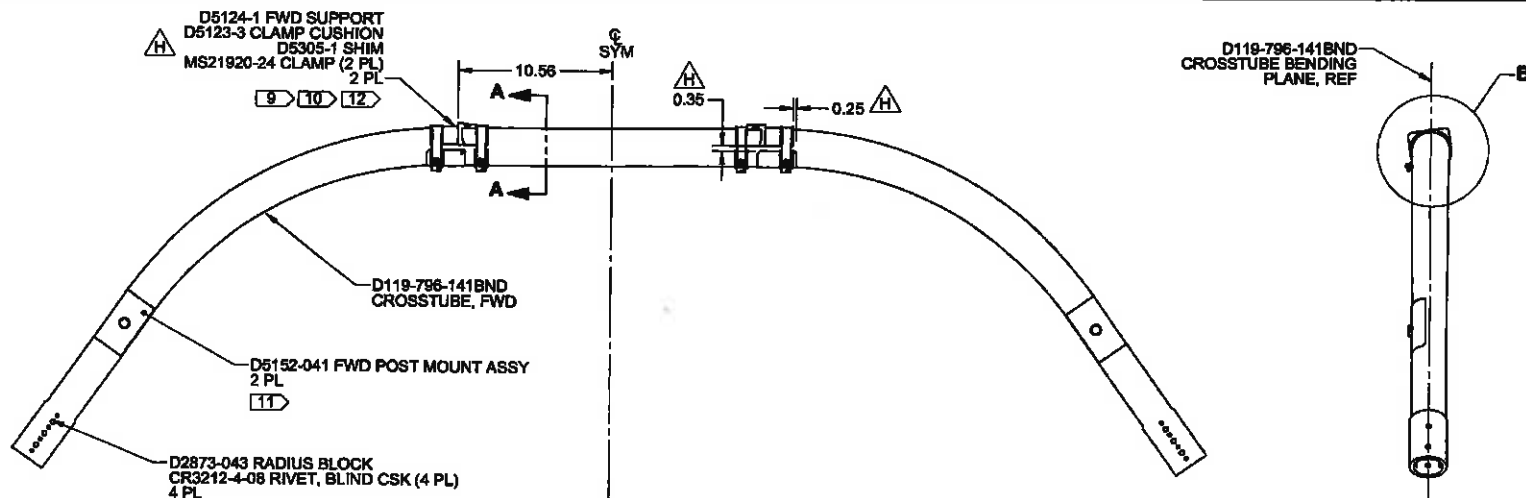
DRAWING NO.
D119-798-141

REV. H
SHEET 1 OF 6

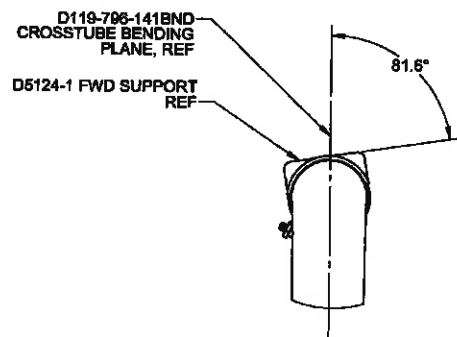
TITLE
XTUBE ASSY (AW119 MKII FWD)

SCALE
NTS

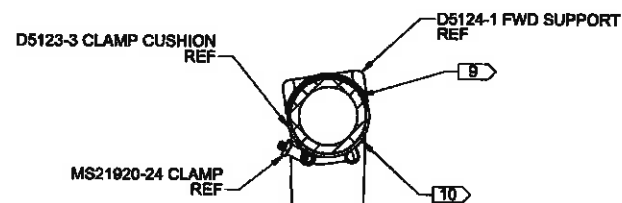
COPYRIGHT © 2014 BY DART AEROSPACE LTD
THIS DOCUMENT IS UNCLASSIFIED AND IS SUPPLIED ON THE EXPRESS UNDERSTANDING THAT IT IS NOT TO BE REPRODUCED OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT
WRITTEN PERMISSION FROM DART AEROSPACE LTD.



D119-796-141 XTUBE ASSY (AW119 MKII FWD)



DETAIL B
SCALE 2X

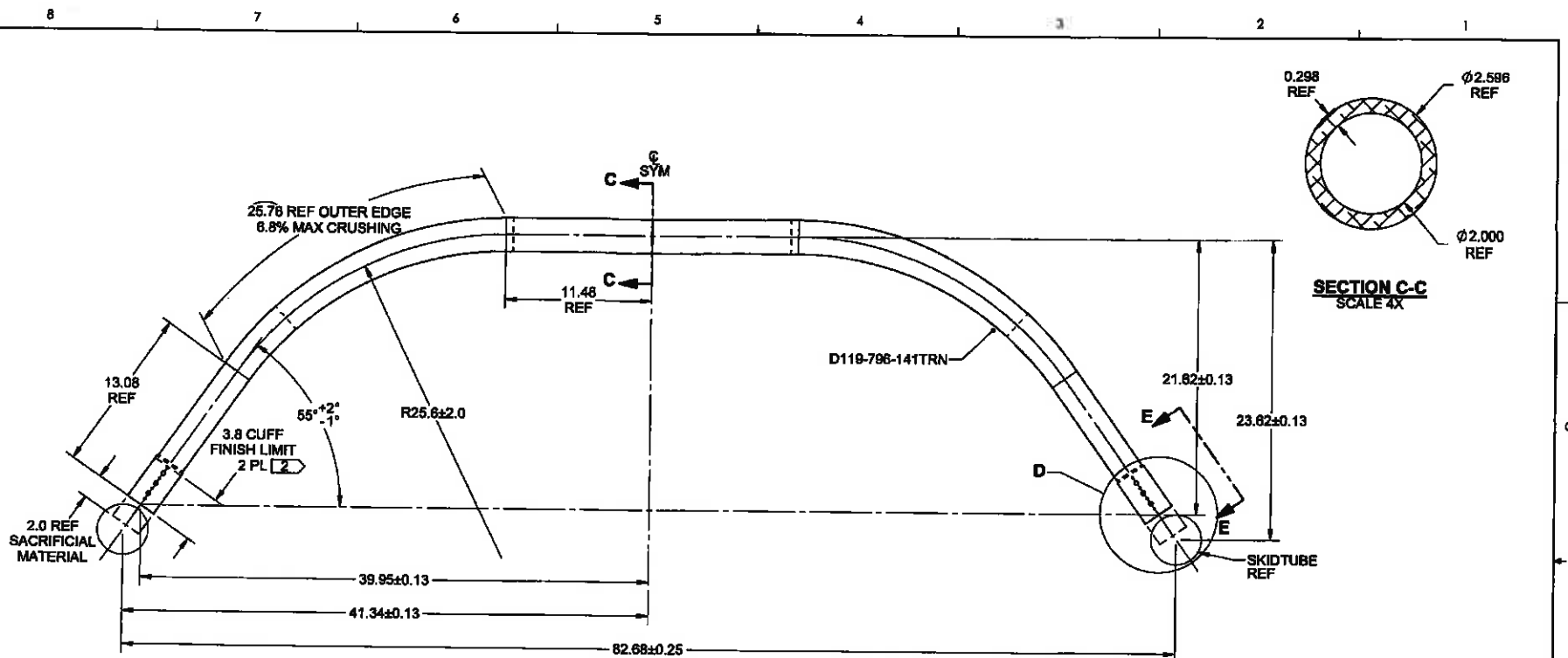


SECTION A-A
SCALE 2X

RELEASED
2015-11-04

APPROVED

DESIGN	AP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	AP		
CHECKED	AJS	DRAWING NO.	REV. H
MFG. APPR.	JLM	D119-796-141	SHEET 2 OF 8
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD)	NTS
DATE	15.10.13	COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PROPRIETARY AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE REPRODUCED OR COPIED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION FROM DART AEROSPACE LTD.	



D119-796-141BND CROSSTUBE, FWD
BENDING AND DRILLING DETAIL

NOTES:

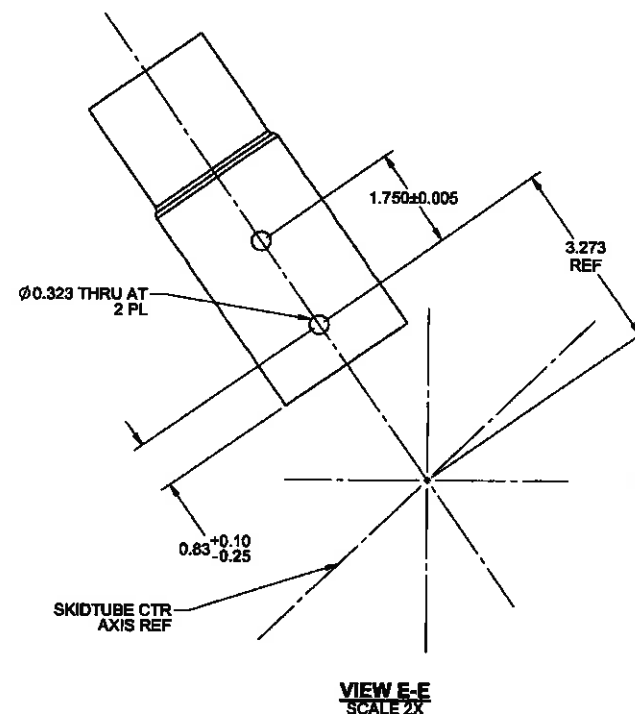
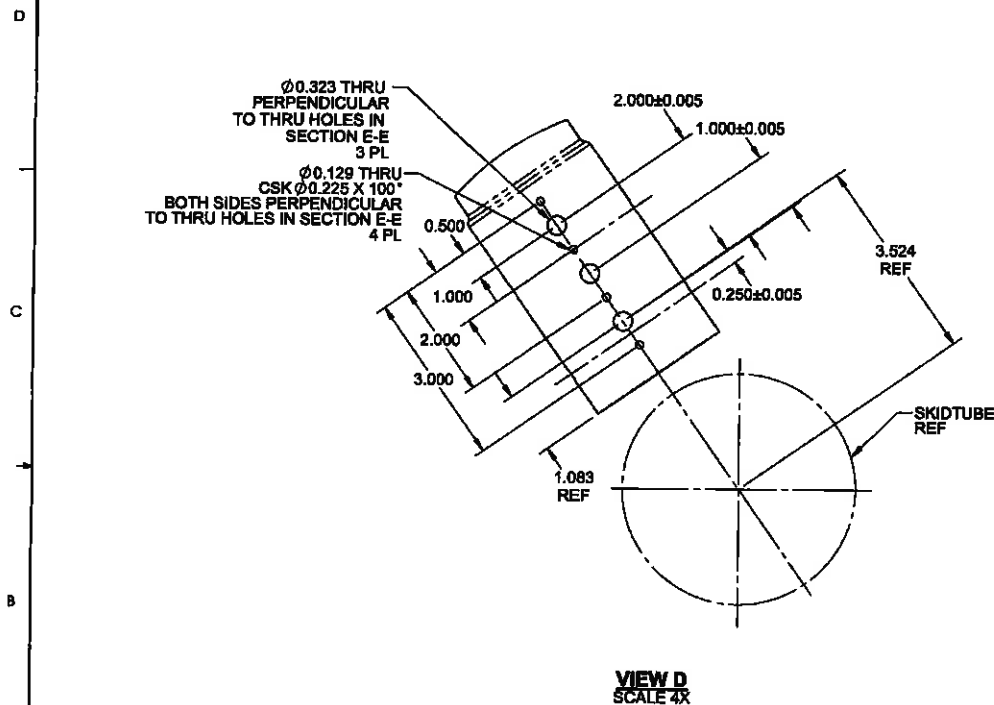
- 1) MATERIAL: MADE FROM D119-796-141TRN
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
DO NOT APPLY PRIMER TO CUFFS IN LOCATION SHOWN, MASK PRIOR TO FINISHING
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 16.70 lbs
- 8) PART IS SYMMETRICAL ABOUT CENTERLINE
- 9) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6.8% BASED ON OD.
- 10) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038
- 11) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM DEFECTS SUCH AS SCRATCHES, NICKS OR DENTS. DEFECTS UP TO 0.005 MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.

RELEASED
2015-11-04

APPROVED

DESIGN	AP	DART AEROSPACE LTD	
DRAWN	AP	HAWKESBURY, ONTARIO, CANADA	
CHECKED	AJS	DRAWING NO.	REV. H
MFG. APPR.	JLM	D119-796-141	SHEET 3 OF 8
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD)	NTS
DATE	15.10.13	COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

8 7 6 5 4 3 2 1



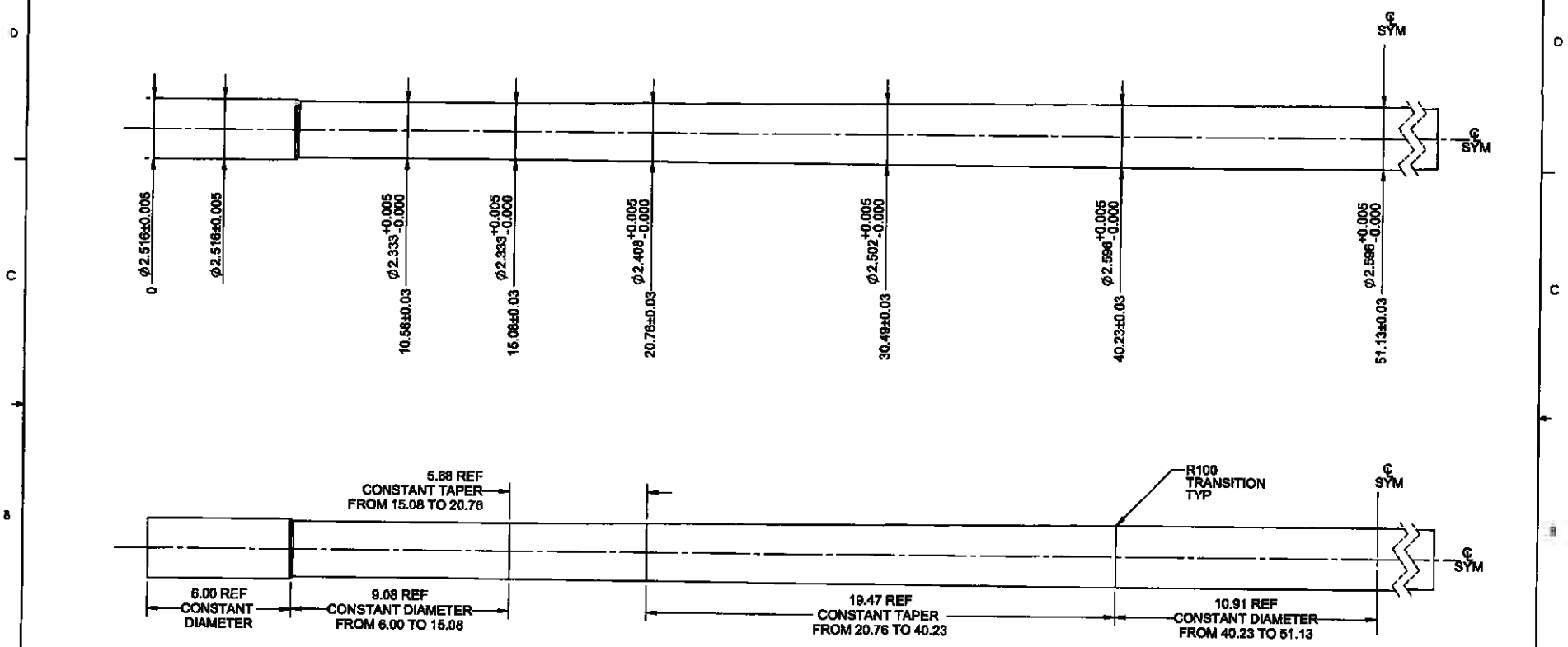
RELEASED
2015-11-04

APPROVED

DESIGN	AP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	AP		
CHECKED	AJS	DRAWING NO. D119-796-141	REV. H
MFG. APPR.	JLM		SHEET 4 OF 6
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD)	NTS
DATE	15.10.13	COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS UNDERSTANDING THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR DISCLOSED OR REPRODUCED IN ANY FORM OR BY ANY MEANS WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

8 7 6 5 4 3 2 1

8 7 6 5 4 3 2 1



D119-796-141TRN CROSSTUBE, FWD

- NOTES:**
- 1) MATERIAL: MANUFACTURE FROM D8024-103 (PREFERRED) OR D8005-103
FINISHED LENGTH = 102.26 ± 0.020 (BEFORE BENDING/TRIMMING)
 - 2) FINISH: NONE
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
 - 6) IDENTIFICATION: NONE
 - 7) WEIGHT: 16.70 lbs
 - 8) PART IS SYMMETRICAL ABOUT CENTERLINE

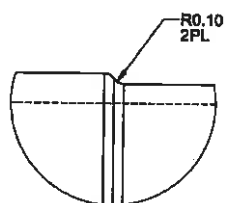
RELEASED
2015-11-04

APPROVED

DESIGN	AP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA
DRAWN	AP	
CHECKED	AJS	DRAWING NO. D119-796-141
MFG. APPR.	JLM	REV. H SHEET 5 OF 8
APPROVED	WM	TITLE XTUBE ASSY (AW119 MKII FWD)
DE APPR.	DS	SCALE NTS
DATE	15.10.13	COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PROPRIETARY AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

8 7 6 5 4 3 2 1

D119-796-141TRN CROSSTUBE, FWD
SUPPLEMENTAL VIEW: NOMINAL WALL THICKNESS



DETAIL F
SCALE 2X

DESIGN	AP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	AP		
CHECKED	AJS	DRAWING NO.	REV. H
MFG. APPR.	JLM	D119-796-141	SHEET 6 OF 6
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	XTUBE ASSY (AW119 MKII FWD)	NTS
DATE	15.10.13	COPYRIGHT © 2014 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL, AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE REPRODUCED FOR ANY PURPOSES OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

RELEASED
2015-11-04

APPROVED

CHAMFER ID
AS REQUIRED
FOR TOOLING

F

6 SYM

6 SYM

0.238 REF
NOMINAL WALL

0.167 REF
NOMINAL WALL
10.58±0.03

0.167 REF
NOMINAL WALL
15.08±0.03

0.204 REF
NOMINAL WALL
20.76±0.03

0.251 REF
NOMINAL WALL
30.49±0.03

0.238 REF
NOMINAL WALL
40.23±0.03

0.238 REF
NOMINAL WALL
51.13±0.03

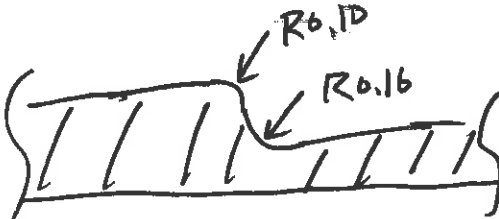
NR Date: Oct 31/19.



WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. 19-7680

Route update only

Job: <u>185707</u>		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☒		DEPARTMENT/PROCESS Skid-tube ☐ Cross tube ☒ Eng. (Non-AW) ☐ Engineering ☐ Machining ☐ Small Fab ☐ Prod. Eng. Coord. ☐ Water Jet ☐ Large Fab ☐ Finishing ☐ Rec/Store/Packaging ☐ Supplier Quality ☐					
Date : <u>14/11/7</u>	Sequence #:		QTY Affected : <u>1</u>				MRB (QSI042) <u>12</u> <u>9/18/11/7</u>		
Description Work Order Deviation			Disposition						
R0.10 red at cuff is R0.16. Program has been this way since first prototype. 			Acceptable						
			Completed By <u>9/9/18/11/7</u> Lead hand / Supervisor <u>[Signature]</u> 19-07-11 QC / QA Coordinator DAS 55 9-89 <u>19-7-11</u>						
Root Cause			FAULT CATEGORY						
Operator ☐			☐ Pressure/Forced		☐ Contamination		☐ Power Loss/Surge		
Manufacturing Process ☒			☐ Bending		☐ Misaligned/off center		☐ Folio/Program		
Equip/Tooling ☐			☐ Crushing		☐ BOM/Route		☐ Grain Direction		
Handling/Presservation ☐			☐ Cracks		☐ Broken/Damage/Defect		☐ Weld		
Material ☐			☐ Crimp/Kink/Ripple/Wave/Twist		☐ Incomplete/Unclear Instructions		☐ Wrong Stock Pulled		
Product Improvement ☐			☐ Marks/Chatter		☐ Drill Holes		☐ Out of Sequence		
Process Improvement ☐			☐ Mislabeled		☐ Fit/Function		☐ Off-set/Set-up		
Human Factors ☐			Other/Details:						